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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
CANELLA, KAREN A

ART UNIT	PAPER NUMBER
1642	12

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/826,609	Applicant(s) ROBERTS ET AL.	
	Examiner Karen A Canella	Art Unit 1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) *8-24* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-7,25 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *6* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Acknowledgment is made of applicants election of Group I, drawn to a method to identify a putative cancer therapeutic comprising identifying a uniquely expressed or over expressed protein and determining if said protein is immunogenic. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 1-26 are pending. Claims 8-24, drawn to non-elected inventions, are withdrawn from consideration. claims 1-7, 25 and 26 are examined on the merits.

Priority

It is noted that applicants claim priority to provisional application 60/103,220. The provisional document states on page 2, lines 5-10 that "the "invention provides for lysing gp100 melanoma cells and methods for lysing cells differentially expressing cdc2-related protein kinase or integrin alpha-3. Cancer vaccines and adoptive immunotherapeutic methods to treat or prevent conditions associated with the presence of these cells n a subject are also provided." These disclosures do not provide support for the instant claims which read on methods for identifying and using and differentially expressed or uniquely expressed tumor antigen. Accordingly, the instant application will be given the instant U.S. filing date of October 5, 2001. It is noted that the Declaration also claims priority to PCT/US99/23166 by way of 35 USC 119 (a)-(d). however, the PCT application was more than one year in advance of the instant filing date, and cannot qualify as a foreign priority document which only allows for priority to one year in advance of the instant US filing date. It is noted that the PCT (published as WO 00/20029) designates the United States. It is recommended that the priority claim be corrected to reflect a continuation or a continuation-in-part of PCT/US99/23166, and that this priority claim be set forth in the first line of the specification.

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

it claims foreign priority to a PCT document filed two years in advance of the instant U.S. application.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2, 3, 4, 5 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(A)It is unclear how claims 2 and 3 further limit claim 1 as there is no nexus between the administration to a subject as recited in claims 2 and 3 and the method objective of claim 1.

(B)The metes and bounds of claim 1, 4 and 5 cannot be determined as it is unclear what the "putative cancer therapeutic" is at the conclusion of the claim: it is unclear if the polynucleotide, the protein or fragment thereof of claim 1 would be the putative cancer therapeutic, it is unclear if the "immune effector cells" of claim 4 are the putative cancer therapeutic; it is unclear if the antibody of claim 5 is the putative cancer therapeutic.

(C) Claims 4 and 5 are vague and indefinite in the recitation of "determining if said immure effector cells are immunogenic" and "determining if said antibodies are immunogenic". The definition of "immunogenicity" is "The potential of an antigen (or immunogen) to stimulate an immune response in a given species of animal. Immunogenicity depends of the size of the antigen and the extent to which its antigenic determinants differ from the immunized animal" (Herbert et al, Ed.s, Dictionary of Immunology, 3rd Edition, 1985, page 116). Thus, if an antibody or effector cell of claims

4 and 5 were to be immunogenic, an immune response would be generated in the host against the antibody or effector cell. (D)Claim 7 fails to relate the identification of the amino acid sequence with the method objective of designing a cancer vaccine. further, the metes and bounds of "not previously known to be antigen" as recited in claim 7 is unclear, as there is no reference to a point in time to determine the relationship between the current time and a "previous" time. "Previous" is a relative term not defined by the claim, the specification does not provide a standard for ascertaining what can be considered as "previous".

(E) Claim 25 is vague and indefinite in the recitation of "the first polynucleotide" and the "second polynucleotide". It is unclear how the second polynucleotide differs from the first polynucleotide. Further, it is unclear if the antigen presenting cell, the effector cell, the protein of the polynucleotide is the "putative cancer therapeutic" as recited in the last line of the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Boon et al (WO 92/20356).

Claim 1 is drawn to a method to identify a putative cancer therapeutic comprising the steps of identifying a polynucleotide which is uniquely expressed or over expressed in a target cancer cells as compared wit a control non-cancer cell; determining the protein corresponding to said identified polynucleotide; determining if said protein or fragment thereof is immunogenic; wherein the ability of said protein to elicit and immune response against said target cancer cell is indicative of a cancer therapeutic. Claim 2 embodies the method of claim 1 wherein said

immunogenic protein or fragments thereof is administered to a subject in a gene delivery vehicle. claim 3 embodies the method of claim 1 wherein said immunogenic protein or fragments thereof is administered to a subject in an antigen presenting cell. Claim 4 embodies the method of claim 1 further comprising the steps of generating immune effector cells reactive with an immunogenic protein and determining if said immure effector cells are immunogenic; wherein the ability of said immune effector cells to elicit an immune response against said target cancer cell ix indicative of a putative cancer therapeutic. Claim 5 embodies the method of claim 1 further comprising the steps of generating antibodies reactive with an immunogenic protein and determining if said antibodies are immunogenic; wherein the ability of said antibodies to elicit and immune response against said target cell is indicative of a putative cancer therapeutic. Claim 6 embodies the method of claim 5 wherein said antibodies are monoclonal antibodies.

Claim 7 is drawn to a method to design a cancer vaccine from a sample obtaining for a subject suffering from cancer, the improvement comprising identifying an amino acid sequence which is not previously known to be antigen, but which is uniquely expressed or over expressed ins a target cancer cell from said subject, as compared with a control non-cancer cell and capable of eliciting an immune response against said target cancer cell.

Claims 25 is drawn to a method to identify a putative cancer therapeutic comprising the steps of identifying a first polynucleotide which is expressed at a higher level in a target cancer cells as compared wit a control non-cancer cell; determining the protein corresponding to said identified polynucleotide; determining if said protein is immunogenic comprising the steps of introducing a gene transfer vector containing a second polynucleotide comprising a sequence corresponding to said protein into a antigen presenting cell under conditions whereby said polynucleotide is expressed by said antigen presenting cell; culturing naive immune effector cells with said antigen presenting cells under conditions whereby said naive immune effector cells are educated to recognize antigens presented on the surface of said antigen presenting cell in the context of an MHC molecule; determining if said educated immune effector cells can lyse said target cancer cells, whereby the ability of said protein to elicit an immune response against said target cancer cell is indicative of a putative cancer therapeutic.

Boon et al disclose a method foe identifying putative cancer therapeutic comprising the identification of tumor antigen precursors as polynucleotides which are uniquely expressed in

tumor cells (page 6, lines 19-26, and page 52, lines 4-9). Boon et al disclose the determination of the proteins encoded thereby (page 7, lines 1-6) and that the tumor rejection antigen precursors can be expressed in cells transected with the gene and then used to generate an immune response against the tumor of interest (page 7, lines 12-15), thus fulfilling the specific embodiments of claims 1 and 2. Boon et al disclose cancer therapeutics consisting of cells transected with the identified nucleic acid sequences which code for the tumor antigen precursors and cells which additionally encode for the HLA/MHC molecules (page 53, lines 20-23). Boon et al disclose vaccines comprising the tumor antigen precursors to induce an immune response, and the antigen-presenting cells comprising said tumor antigen precursors combined with pharmaceutical compositions (page 55, lines 19-27). Boon et al disclose the generation of polyclonal or monoclonal antibodies reactive with said tumor antigen precursors (page 56, lines 12-20), thus fulfilling the specific embodiments of claims 5 and 6. Boon et al disclose effector cells reactive with the tumor antigen precursor wherein said effector cells are able to lyses the target tumor cells , thus fulfilling the specific embodiments of claim 4 (page 19, lines 22-24). Boon et al also teach a method whereby fibrobalsts are transfected with Ld are required for presentation of tumor antigens, thus fulfilling the specific embodiments of claim 25, wherein the fibroblast transected with Ld is the antigen presenting cell for the P1A antigen; boon et al disclose that this transfected fibroblast was able to by lysed by tumor specific CTL, thus fulfilling the specific embodiment of claim 25 (page 28, lines 15-23).

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims are rejected under 35 U.S.C. 103(a) as being unpatentable over Boon et al (WO 92/20356) in view of Maraskovsky et al (US 6,017,527). The specific embodiments of claims 1-

7 and 25 and the teaching of Boon et al which anticipate said embodiments are set forth above. Claim 26 embodies the method of claim 25 wherein said antigen presenting cell is a dendritic cell.

Boon et al teach a cells transfected with sequences encoding tumor antigen precursors and HLA or MHC molecules (page 53, lines 20-23). Boon et al do not teach the transfection of a dendritic cell with a tumor antigen or a tumor antigen precursors.

Maraskovsky et al teach the transfection of dendritic cell encoding an antigen include tumor antigens within the scope of antigens (column 5, lines 21-29). Maraskovsky et al teach that dendritic cells have a high capacity for sensitizing MHC restricted T cells and are very effective for presenting antigens to T cells in situ (column 5, lines 6-9).
It would have been *prima facie* obvious to one of ordinary skill in the art at the time the claimed invention was made to substitute dendritic cells transfected with tumor antigen precursor for the antigen presenting cells taught by Boon et al.

One of ordinary skill in the art would have been motivated to do so with a reasonable expectation of success by the teachings of Maraskovsky et al on the effectiveness of dendritic cells to present antigens from tumors.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen Canella whose telephone number is (703) 308-8362. The examiner can normally be reached on Monday through Friday from 8:30 am to 6:00 pm. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Caputa, can be reached on (703) 308-3995. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Karen A. Canella, Ph.D.
Patent Examiner, Group 1642
9/8/03